PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Wind River Watershed Restoration

BPA project number: 9801900
Contract renewal date (mm/yyyy): 1/1999 ☒ **Multiple actions?**

Business name of agency, institution or organization requesting funding
Underwood Conservation District (contact agency), U.S. Forest Service, U.S. Geological Survey, and Washington Department of Fish and Wildlife

Business acronym (if appropriate) UCD, USFS, USGS, WDFW

Proposal contact person or principal investigator:

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NPPC Program Measure Number(s) which this project addresses
2.2A, 5.9A, 7.1, 7.1C, 7.6C, 7.7, 7.8B

FWS/NMFS Biological Opinion Number(s) which this project addresses

Other planning document references
The proposed on-ground restoration activities listed in Objective 4 are called for in the Wind River Wastershed Analysis (USFS 1996a) and are consistent with the Wind River Action Committee's (AC) expressed mission and goals (UCD 1998). The AC serves as a watershed council for the Wind River with broad representation from public and private stakeholders. The proposed actions address NMFS's (1996a) working guidelines for coastal salmon conservation, WDFW's (1997) Wild Salmonid Policy, State of Washington's (1998) Lower Columbia Steelhead Conservation Initiative (LCSCI), and the Independent Science Group's (1996) Return to the River. The actions are consistent with the restoration actions identified in BPA's (1997) Watershed Management Program EIS, the tribe's Wy-Kan-Ush-Mi Wa-Kish-Wit (Nez Perce et al. 1996), WDFW's (1997) Wild Salmon Policy, the State of Washington's (1998) LCSCI, and the Record of Decision for the Northwest Forest Plan (USFS and BLM 1994).

Short description
Restore habitat within the Wind River subbasin to support healthy populations of wild steelhead and salmon.

Target species
Summer run steelhead (Oncorhynchus mykiss)

Section 2. Sorting and evaluation

Subbasin
Wind River subbasin

Evaluation Process Sort

CBFWA caucus	Special evaluation process	ISRP project type
Mark one or more caucus	If your project fits either of these processes, mark one or both	Mark one or more categories
☒ Anadromous fish ☐ Resident fish ☐ Wildlife	☐ Multi-year (milestone-based evaluation) ☒ Watershed project evaluation	☒ Watershed councils/model watersheds ☒ Information dissemination ☐ Operation & maintenance ☐ New construction ☒ Research & monitoring ☐ Implementation & management ☐ Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?
1998	(Coordination) Facilitated monthly meetings of the Wind River Action Committee (AC) to develop a common mission and goals of watershed stakeholders.	Not applicable
1998	(Coordination) Facilitated meetings of the Technical Advisory Committee to provide technical support to the AC and design restoration projects.	Not applicable
1998	(Monitoring) Monitored juvenile steelhead populations.	In part, yes. Met objectives in Statement of Work, which was necessarily modified from those proposed due to less than full funding.

1998	(Monitoring) Monitored steelhead smolts.	Yes. Placed four outmigrant traps within the watershed and determined smolt and parr population estimates at each site.
1998	(Monitoring) Monitored steelhead adults.	In part, yes. Met objectives in Statement of Work, which was necessarily modified from those proposed due to less than full funding.
1998	(Monitoring) Evaluated spawning gravel composition in the Wind River watershed.	Determined spawning composition on 9 index reaches representing 22 miles of spawning habitat.
1998	(Assessment)	Activity associated with this objective will start in January 1999.
1998	(Restoration) Restored 1500 linear feet of degraded stream at Stabler Cut Bank Project.	Yes. Increased large woody debris to 120 pieces/mile. Increased bank stability to 75%.
1998	(Restoration) Decommissioned 4.4 miles of road in Dry Creek basin	In part, yes. Met objectives in Statement of Work, which was necessarily modified from those proposed due to less than full funding.
1998	(Education) Formed Stevenson High School stream monitoring program	Not applicable.
1998	(Education) Supported Wind River Middle School's environmental education program.	Not applicable.

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	(Coordination) Coordinate watershed stakeholders in order to guide the implementation of watershed restoration actions that are consistent with stakeholder objectives. [UCD, USFS, USGS, WDFW]	a	Facilitate 12 monthly meetings of the Wind River Action Committee to draft a watershed managment plan and prioritize projects. (UCD)
		b	Facilitate 12 monthly meetings of the Wind River Technical Advisory Committee to conduct assessment and prioritize projects. (UCD)
2	(Monitoring) Monitor physical habitat conditions and natural production of juvenile, smolt, and adult steelhead in the Wind River subbasin. [USGS, WDFW, USFS, UCD]	a	Conduct sampling and derive population estimates for juvenile steelhead and other salmonids at six 500-m index sites and two entire tributary watersheds. (USGS)
		b	Relate density and biomass of juvenile summer steelhead to stream habitat conditions and geomorphological contexts. (USGS)
		c	Conduct sampling at smolt traps and use data to derive an estimate for the annual steelhead smolt production in the subbasin. (WDFW)
		d	Conduct sampling and use data from redd surveys, snorkel surveys, and adult trappings to derive an estimate for the

			annual steelhead adult production in the subbasin. (WDFW)
		e	Conduct physical stream habitat surveys to assess stream conditions and changes over time at selected sites throughout the subbasin. (USFS)
		f	Collect discharge data and use these data to assess mean, minimum, and peak flows at established sites throughout the subbasin. (USFS)
		g	Monitor water quality at established stations and use these data to determine if water quality is a limiting factor. (UCD)
		h	Monitor suspended sediments and amount of fines in redds to determine if these characteristics are limiting factors. (USFS)
3	(Assessment) Use a science based framework to assess the condition of the watershed to determine what factors prevent stakeholder objectives from being met and to prioritize actions that result in meeting those objectives. [USGS, WDFW, USFS, UCD]	a	Apply established watershed assessment methods to determine spatial variability and status of habitat conditions and to identify data gaps. (USGS, WDFW, USFS, UCD)
		b	Revise list of needed project and monitoring activities, and prioritize the list based on value and likely success of desired outcomes. (USGS, WDFW, USFS, UCD)
4	(Restoration) Restore stream habitats and watershed processes that will support self-sustaining populations of steelhead. [USFS, UCD, USGS]	a	Decommission 5 miles of road within sub-watersheds as prioritized in the Wind River Watershed Analysis. (USFS)
		b	Place key pieces of LWD to achieve the range of natural variability for the Wind River watershed (75-120 pieces/mile), 2.25 rm in the Wind River, Upper Trout, Crater, Compass and Ninemile creeks. (USFS, UCD)
		c	Plant and thin 45 acres of riparian forest to increase stream shade, provide future LWD and channel stability. (USFS, UCD)
		d	Increase nutrient availability and productivity by supplementing basin with salmonid carcasses. (USFS)
5	(Education) Promote watershed stewardship among students, the community, private landowners, and local governments. [UCD, USFS, WDFW]	a	Support Stevenson High School stream monitoring program, Wind River Middle School's environmental education program, and develop and support a Carson Elementary School Adopt-A-Stream program. (UCD, USFS, WDFW)
		b	Distribute informational brochures, submit articles to local paper, and conduct

			community volunteer events to inform public about watershed issues, activities, and opportunities for involvement. (UCD, USFS)
		c	Provide technical assistance to agency personnel and landowners developing water resource mitigation measures for projects on private lands. (UCD)

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	10/1999	9/2000		Watershed analysis for entire subbasin.	3.80%
2	10/1999	9/2000		Data and analyses on habitat factors and fish populations.	48.30%
3	10/1999	9/2000		Prioritized list of needed projects.	2.90%
4	10/1999	9/2000	Increasing trend in juvenile survival and adult returns of steelhead.	Five road miles decommisioned. Addition of LWD in 2.25 miles of stream. Planting of 45 acres of riparian forest.	42.40%
5	10/1999	9/2000		A more informed and involved community.	2.60%
				Total	100.00%

Schedule constraints
Stream restoration work that entails moving or adding materials will be contingent on successful obtainment of state, county, and federal permits. Fish monitoring work will be contingent on obtaining collection permits from state and federal agencies.

Completion date
2005

Section 5. Budget

FY99 project budget (BPA obligated): $350,000

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel		%32	365,575
Fringe benefits		%9	98,547
Supplies, materials, non-expendable property		%6	67,070

Operations & maintenance	Maintenance and repair of smolt traps and adult ladder	%0	3,000
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	Smolt trap, adult trap	%3	36,000
NEPA costs	For operations under OBJ-4 a,b	%2	23,500
Construction-related support		%0	0
PIT tags	# of tags: 1,500	%0	4,350
Travel		%2	22,327
Indirect costs		%13	145,381
Subcontractor	USGS-WRD to maintain gauges (OBJ-2f)	%2	25,121
Subcontractor	Water quality analysis lab work (OBJ-2g)	%0	3,800
Subcontractor	Road decommissioning operations (OBJ-4a)	%8	93,653
Subcontractor	LWD placement (OBJ-4b)	%17	193,663
Subcontractor	Riparian planting (OBJ-4c)	%5	52,625
Subcontractor	Water quality analysis lab work (OBJ-4d)	%1	10,000
Other		%0	1,800
		TOTAL BPA FY2000 BUDGET REQUEST	$1,146,412

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount ($)
Lower Columbia Fish Recovery Board	Habitat restoration projects in lower Wind River basin	%4	49,300
USFS	Habitat restoration projects in upper Wind River basin	%12	160,000
USFS	Monitoring physical and biological stream components	%2	30,000
		%0	
		Total project cost (including BPA portion)	$1,385,712

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	$950,000	$990,000	$1,000,000	$850,000

Section 6. References

Watershed?	Reference
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PART II - NARRATIVE

Section 7. Abstract

In 1992, the American Fisheries Society stated Wind River steelhead are at risk of extinction. In March 1998, Lower Columbia steelhead was listed as 'threatened' under the ESA. Wind River summer steelhead is a stock of highest priority for restoration according to the State of Washington's Lower Columbia Steelhead Conservation Initiative. Restoration actions designed to recover steelhead have been identified. However, we have lacked adequate funding to implement these restoration activities and to evaluate their effectiveness. The proposed activities are a joint product of public and private stakeholders. The actions address key measures of the Columbia Basin Fish and Wildlife Program and concerns of the Endangered Species listing of lower Columbia steelhead. Restoration objectives target areas identified as highest priority by the U.S. Forest Service's Wind River Watershed Analysis. As part of this FY2000 proposal and our FY1999 work, we are expanding this watershed analysis to include non-federal lands. A holistic, community-based watershed restoration approach will be utilized. Restoration efforts will address known degraded stream, riparian, and up-land areas. An adaptive management strategy will build upon past successes within the subbasin. The collection of biological, physical habitat, and water quality data will fill critical gaps necessary to assess the overall condition of the watershed and prioritize future restoration efforts. Coordination and education of landowners, local community, students, and other stakeholders are incorporated in order to achieve the restoration goal. Our ultimate goal is to restore current returns of adult steelhead from under 200 adults to over 1000 adults.

Section 8. Project description

a. Technical and/or scientific background

On March 13, 1998 Wind River steelhead were listed as 'threatened' under the Endangered Species Act. Most populations of salmonids that historically occupied the Wind River watershed are considered depressed (WDF et al. 1993). According to a report by the American Fisheries Society, the Wind River winter steelhead stock is at a high risk for extinction, the summer steelhead stock is at a moderate risk for extinction, and the sea-run cutthroat is believed to be extirpated from the subbasin (Nehlsen et al. 1991). Because Shipherd Falls (located 2.3 miles upstream from the mouth of the Wind River) was a natural barrier to all anadromous fish except steelhead, summer steelhead were dominant and numerous above this barrier. Bryant (1949) estimated summer steelhead run size was 3,250 with an escapement of 2,500 spawners. The current number of wild summer steelhead spawning in the Wind River subbasin has been reduced to under 200 adults in recent years (Rawding 1997b). In addition, a fall race of chinook that dominated the lower reach of the Wind River is depressed and composed of a substantial number of stray hatchery fish (WDF et al. 1993).

Anadromous fish losses have been attributed to the construction of Bonneville Dam, timber harvest, and rural development of the upper watershed (WDW et al. 1990). Activities in the upper

watershed have severely impacted riparian areas and stream channels in several key steelhead subbasins evidenced by maximum water temperatures exceeding 75 degrees F, increased peak flows, and increased sedimentation (USFS 1996a). There is also concern of the ecological and genetic risks posed by the anadromous hatchery programs (NMFS 1996b). Carson National Fish Hatchery was constructed in 1938 to mitigate for the construction of Bonneville Dam and currently produces 1.8 million spring chinook smolts. A fish ladder at Shipherd Falls was constructed to allow salmon access to the hatchery at river mile 18. Hatchery steelhead smolts have been released in the basin since the 1960s and the current release is between 20,000 and 40,000 fish.

The Wind River Technical Advisory Committee (TAC) was formed in 1994 in response to the decline of steelhead within the Wind River subbasin. The team currently includes technical specialists from the UCD, USFS USFWS, WDFW, USGS, Washington State University Cooperative Extension, Longview Fibre Corp., Washington Dept. of Natural Resources (WDNR), and the Yakama Indian Nation (YIN). Based on USFS's (1996a) watershed analysis and USFS's (1993) Trout Creek watershed assessment, the TAC and agency staff secured funding and completed a number of restoration projects. Restoration efforts have resulted in the design and implementation of bio-technical methods to improve steelhead habitat by stabilizing stream banks, improving channel complexity, reconnecting flood plains, rebuilding riparian areas, and decommissioning roads. High priority fish passage problems at Hemlock Dam identified by Orsborn et al. (1987) were addressed in 1996 by increasing adult attraction flow at the ladder entrance and eliminating false attraction flow from the Wind River Nursery. Remaining concerns with fish passage and water quality at this facility are currently being assessed for feasibility and restoration potential with BPA FY1998 funding.

This proposal incorporates both public and private lands recognizing that "limiting restoration to public lands would be biologically futile and wasteful of public funds" (NPPC 1994). The ISG (1996) and most other regional planning bodies recommend a watershed approach. In an effort to address habitat concerns across all land ownerships, the UCD and TAC developed a watershed council in the subbasin with funding through USFWS and BPA (FY1998 funding). This group of stakeholders, known as the Wind River Action Committee (AC), was formed in 1997 and was modeled after other successful councils, such as the Grande Ronde Model Watershed Program. Membership includes representatives from small private businesses, private timber companies, government agencies, landowners, recreational users, conservation groups, schools, and others. The AC, with technical assistance from the TAC, has ranked proposed restoration projects on private lands. The top two projects (one streambank restoration and one riparian reforestation) were conducted as cooperative "demonstration" watershed restoration projects in 1998. The project ranking process of the AC and TAC is currently being expanded to include a wider range of ranking criteria and will address projects across all land ownerships.

The Columbia Basin Fish and Wildlife Program (NPPC 1994) stated that salmonid restoration should be linked to identification of key uncertainties and variables that limit populations. We have proposed to link the steelhead's productivity and life history diversity to address this issue. The information will: 1) directly and immediately help the planning efforts of the Wind River Action Committee, and 2) fill gaps in implementation of measures of the Fish and Wildlife Program that have received little attention to date. The Wind River represents an important but relatively overlooked type of watershed in the Columbia Basin: subbasins above Bonneville Dam but with steelhead stocks of coastal lineage. Our results can be incorporated to help rebuild other coastal stocks, such as those in small tributaries between Bonneville Dam and the Hood River. Results may also be useful for planned efforts to reintroduce anadromous fish into the White Salmon River above Condit Dam.

The TAC and agency staffs have endorsed our holistic, community-based watershed approach to restore steelhead and their habitat. Our proposed projects are consistent with the plans and priorities of stakeholders, along with state, federal, and tribal agencies. We propose to preserve and protect the remaining run of steelhead by rehabilitating watershed health, water quality, channel morphology, and stream habitat; by monitoring populations and production of steelhead; and by increasing our knowledge of the problems and needs of the watershed. Successful restoration projects require public involvement, and we have established a public education and involvement process through the formation of a local watershed council. The decline of steelhead returning to the Wind River, the potential reasons for this decline, and the recovery of these steelhead in this watershed exemplify a spectrum of problems and activities that the Fish and Wildlife Program (FWP) was designed to address.

b. Rationale and significance to Regional Programs

The FWP (Section 7.6C) and the ISG (1996) have recommended a holistic, watershed approach to identify key physical and biological limitations for the recovery of salmon and steelhead stocks. The activities we have proposed for the Wind River watershed meet the FWP goals to encourage interagency cooperation along with public participation. We have proposed an on-the-ground, multi-faceted, and broad-scaled restoration project. We have proposed activities that will provide specific information to the Wind River TAC for their efforts to restore steelhead to the subbasin, and will provide managers with the data needed to make informed decisions about additional efforts to restore the Wind River ecosystem. By involving the community in watershed planning and in on-the-ground restoration activities, we hope to foster a healthy stewardship that will last for generations.

Measure 7.6C of the FWP recognizes the value of the collaborative efforts of the Wind River TAC operating within a local watershed. Measure 7.6C also stresses the importance of landowner and community participation in restoration activities. This is being addressed through the AC, through which all stakeholders, including public and private entities, work on activities in concert. Restoration activities address Measure 7.7 of the FWP. Because of the concern for health of steelhead in the lower Columbia, the need for the type of data sought, and the location of the Wind River (above Bonneville Dam but within the lower Columbia River system), we believe that funding of the proposed projects will yield highly valuable results.

Life history diversity may be an important factor in the persistence of steelhead in the Wind River subbasin. These investigations address measures 2.2A, 5.9A, 7.1, 7.1C, and 7.8B of the FWP. Protection of wild steelhead and their habitat is the goal of the Endangered Species Act (NMFS 1996b). Protection of wild steelhead and their habitat is also the goal of the Wild Salmonid Policy of WDFW (1997), the tribal restoration plan (Wy-Kan-Ush-Mi Wa-Kish -Wit, Nez Perce Tribe et al. 1996), and the Northwest Forest Plan (USFS and BLM 1994). The Wind River summer steelhead has received the highest priority for restoration under the State of Washington's (1998) steelhead recovery plan (LCSCI). Full funding of this proposal would be a timely way of addressing concerns about declining status of steelhead in the lower Columbia River basin.

c. Relationships to other projects

Our efforts in the Wind River watershed have been recognized by Washington State salmon recovery programs. The Washington State legislature recently enacted regional strategies for addressing habitat concerns for 'listed' salmonid species. The Lower Columbia Fish Recovery Board (FRB) was established to prioritize actions put forth in the State of Washington's (1998) LCSCI. The Wind River TAC, which operates under our current BPA funding, is serving as a local planning team to compile known limiting factors in the Wind River watershed that will be used by the FRB to rank proposed projects in Evolutionary Significant Unit 4 (ESU 4). The TAC has and will continue to coordinate with the AC to provide the FRB a prioritized list of Wind River projects to be prioritized with other ESU 4 projects for various state and federal funding sources. These funds would likely be limited to on-the-ground restoration actions, and would serve as cost-share to our proposed BPA-funding for the Wind River Watershed Restoration Project.

This project is a collaborative effort between UCD, WDFW, USFS, USGS, USFWS, WDNR and YIN. Results from this proposed project should be useful to many ongoing and future restoration projects by these agencies. Key personnel within these groups have an established working relationship with the Wind River TAC.

d. Project history (for ongoing projects)

The Wind River Watershed Restoration Project has been funded by BPA since FY1998. Funding began midway through FY1998 under Project Number 9154. Funding received in the last two fiscal years has been much lower than that requested (FY1998: requested $891K, received $350K, 39% of requested; FY1999: requested $669K, received $350K, 52% of requested).

Each of the four cooperating agencies (UCD, USFS, USGS, and WDFW) that received BPA funding in FY1998 submitted their first progress report in Fall 1998. Major results achieved by category include:

Coordination: The Wind River Action Committee was developed and meetings were held monthly. The group formulated a mission and goals statement. Meetings of the Wind River TAC were held to address restoration planning, monitoring planning, and project prioritization.

Monitoring: A total of 12 stream reaches or sections were surveyed for population density and biomass of juvenile steelhead in 1998. Four smolt traps were fished during spring emigration period to estimate smolt production. Redd surveys were conducted throughout the Wind River watershed and over 20 miles were snorkel surveyed to monitor returning adults. The adult trap at Hemlock Dam was monitored throughout the year. Five continuous temperature recorders were deployed to enhance the network of recorders to 14 placed throughout the upper Wind watershed. Sediment analysis was conducted on four index spawning reaches.

Restoration: The first phase of the Stabler Cut-Bank project was completed - restoration of 1500 linear feet of streambank on the middle Wind through installation of 12 fish habitat / erosion control structures, placement of erosion matting, and riparian plantings. A total of 4.4 miles of roads were decommissioned in the upper Wind watershed. Agreements have been drafted for an evaluation of fish passage and development of restoration at Hemlock Dam.

Education: A Stevenson High School stream monitoring program was established on the Wind River, and technical assistance was provided by UCD and USFS staff. Students compiled reports on monitoring results and presented their findings to the AC. Stevenson High students and fish biologists from Russia received hands-on experience with smolt trapping in May of 1998. Technical support was provided to the Wind River Middle School's Junior Environmental Trouble Shooters (JETS) program. Students compiled reports on photo monitoring of restoration projects and presented their findings to the AC. A USFS biologist participated in the Stevenson High School mentor program by assisting a student with their senior project. A timber Stand Management workshop with Wind River landowner attendance was conducted by WSU Cooperative Extension. Technical assistance was provided to one landowner preparing water resource mitigation measures for a landscaping project on the lower Wind River.

e. Proposal objectives

OBJ-1 *(Coordination) Coordinate watershed stakeholders in order to guide the implementaton of watershed restoration actions that are consistent with stakeholder objectives.* Products: Twelve monthly meetings of AC and TAC. Watershed management plan outlining mission, goals, objectives, and action items.

OBJ-2 *(Monitoring) Monitor physical habitat conditions and production of juvenile, smolt, and adult steelhead in the Wind River subbasin.* Products: Report from USGS for Tasks a and b to include: 1) status and trends of juvenile steelhead population in the Wind River system and 2) analysis of juvenile fish life history aspects and productivity and their relationships to availability and quality of habitat. Report from WDFW for Tasks c and d to include estimates of wild steelhead smolt and parr outmigration estimates and estimates of wild steelhead adult escapement. Products from USFS for Tasks e, f, and h to include: 1) a report detailing findings and recommendations from four subbasins sampled and analyzed for percent fine sediment, 2) data from twelve months of gauging discharge from Trout Creek subbasin and the Wind River, 3) a report detailing findings from three replicate surveys of redd distribution in 10 subbasins covering 25 miles for each replicate, and 4) completed habitat surveys on 25 miles of stream. Report from UCD for Task g to include a report on water quality monitoring result

OBJ-3 *(Assessment) Use a science based framework to assess the condition of the watershed to determine what factors prevent stakeholder objectives from being met and to prioritize actions that result in meeting those objectives.* Products: A prioritized list of restoration projects resulting from expansion and refinement of a watershed assessment. This list will be presented to the AC for final prioritization.

OBJ-4 *(Restoration) Restore stream habitats and watershed processes that will support self-sustaining populations of steelhead.* Products: Five miles of roads decommissioned in Upper Wind and Panther Creek basins. A total of 2.25 stream miles to be treated with bio-technical restoration techniques. A total of 45 acres of riparian forest planted. Four technical descriptions of bio-technical methods developed for bank and channel rehabilitation. Annual progress and final reports will be submitted.

OBJ-5 *(Education) Promote watershed stewardship among students, the community, private landowners, and local governments.* Products: Forty student monitoring reports. Two community events (annually). Five hundred informational brochures mailed to resident landowners (annually). At least two

articles in local newspapers promoting watershed efforts. Water resource protection/mitigation measures developed in cooperation with Skamania County for landowners conducting projects.

Benefits to FWP: The types of restoration efforts and information we seek are directly synchronous with goals and measures of the Council's Fish and Wildlife Program (NPPC 1994). The proposed projects will mesh restoration, monitoring, and public involvement efforts that are specifically designed to enhance watershed health, improve water quality, and rebuild wild steelhead runs in the Wind River watershed.

f. Methods

OBJ-1.a. Coordination of the various interest groups will follow coordinated resource management planning methodology. The watershed council is modeled after similar, local councils, including the White Salmon Watershed Management Committee and the Grande Ronde Model Watershed Program. The group will generally follow guidelines prescribed for in the "Management of Non-Point Source Pollution" handbook (Puget Sound Water Quality Authority, 1989). The stakeholders that are represented on the Action Committee include land owners, government agencies, businesses, recreation interests, conservation groups, the timber industry, tribes, and others. Monthly meetings of the AC are conducted to provide final project prioritization, review current activities, share information, and investigate funding opportunities.

OBJ-1.b. The TAC will include a broad spectrum of technical experts in fisheries, hydrology, geomorphology, water quality, forestry, ecology, and education. Members will also represent the various agencies and organizations that have an active role in land management in the basin. TAC members will devise strategies to meet the objectives outlined by the AC. The group will prescribe Best Management Practices and devise appropriate assessment methods to identify restoration opportunities. Monthly meetings of the TAC will be held to conduct assessment, review on-going actions, and plan activities.

OBJ-2.a. We propose to produce annual estimates of population density and biomass of juvenile and resident salmonids, with the primary emphasis on steelhead, for a systematic subsample of 6 out of the 14 index reaches established in prior years (1996-1998). To analyze population status and trends, we will compare these estimates to past estimates that are available, such as those from 1984 (Crawford et al. 1985), 1996 (Connolly 1997), 1997 (Connolly et al. 1997) and 1998 (Connolly, in prep.). To obtain estimates of fish density and biomass, we will first conduct intensive habitat surveys of sampling sites during summer low-flow conditions. Soon after these habitat surveys, fish surveys will be conducted either by snorkeling (for stream sizes greater than or equal to third order) or by electrofishing (for stream sizes less than or equal to third order). When we conduct snorkel surveys, we will largely follow the methodology of Hankin and Reeves (1988), which utilizes a stratified systematic surveying technique to sample and derive an estimate of fish population. We will calibrate our snorkel estimates by the ratio method following guidelines of Dolloff et al. (1993). For small stream reaches that can not be snorkeled, we will electrofish a systematic sample of habitat units within strata of habitat types (e.g., pools, glides, riffles, or finer gradations to achieve desired precision in estimates). When electrofishing is used, habitat units chosen for sampling will be blocked off with nets to insure no movement into or out of the unit during sampling. A backpack electrofisher will be used to conduct two or more passes under the removal-depletion methodology (Zippin 1956, Bohlin et al. 1982, White et al. 1982). The field guides of Connolly (1996) will be used to insure that a pre-determined level of precision for the population estimate is achieved (generally, coefficient of variation no greater than 25%) within each sampling unit for each salmonid species (expected: steelhead/rainbow trout, brook trout) and age group (expected: 2-3 groups). These methods have been chosen to minimize the number of units sampled by electrofishing and in the number of electrofishing passes conducted, which lessen the chance that individual fish will be exposed to potentially harmful effects of electroshocking

We also propose to expand the approach we use for index reach surveys to allow us to derive estimates of fish densities and biomass for entire watersheds accessible to anadromous salmonids. The watersheds of primary interest, based on past sampling and USFS's (1996a) watershed analysis are: Martha Creek, Crater Creek, Layout Creek, Eightmile Creek, Trapper Creek, and Paradise Creek. We plan to survey one of these watersheds in 1999, and two of the remaining watersheds in 2000.

In order to track movements, growth, and survival of juvenile steelhead, we will PIT tag selected groups of age-1 or older juvenile steelhead that we capture during our stream surveys. We will search for tagged fish in downstream smolt traps, in subsequent within year and annual surveys, and in the adult fish

traps at Shipherd Falls and Hemlock Dam. These PIT tags will also be detectable at Bonneville Dam at the smolt and adult stage.

OBJ-2.b. To relate density and biomass of juvenile summer steelhead to stream habitat conditions and geomorphological contexts, we will relate the data collected from habitat surveys to our estimates of fish populations and densities. Data to be obtained from habitat surveys will include stream gradient, amount of large woody debris, pool and other habitat type frequencies, fish cover, stream substrate, channel and habitat unit morphology, hillslope condition and vegetation, riparian condition and vegetation, and affecting anthropogenic and natural disturbances. We will relate stream habitat and geomorphic characteristics to fish condition factors and age structure. These analyses will help us define the limits and potential capacity of the Wind River system to rear juvenile steelhead.

OBJ-2.c. We propose to develop annual estimates of smolt production from the Wind River subbasin. Proposed trap sites will be located to estimate total basin production (mouth of Wind River) and production from key watersheds (Trout Creek, Panther Creek, and Upper Wind River). Rotary screw traps will be fished from March 15 to June 15, which coincides with Wind River smolt migration (Rawding in prep.). Traps will be checked daily and fish will be enumerated. After fish are anesthetized, we will obtain fork lengths and weights from all fish and scale samples will be obtained from up to 10 fish daily. Ages from these fish will be used in conjunction with fork-length frequencies to determine age composition for the smolt outmigration. Smolt estimates will be determined by the trap efficiency method of releasing marked fish upstream of each trap (Thedinga et al. 1994). All fish will be tattooed and marks will be rotated weekly to determine changes in trap efficiency. Trap efficiency will be determined by Bailey's (1951) modification of the Petersen estimator. Short-term survival and mark retention will be measured and used to adjust trap efficiency (Murphy et al. 1996). Confidence intervals will be determined using a bootstrap method (Efron and Tibshirani 1986). In addition, smolts will be coded-wire tagged or PIT tagged. This will enable us to determine an independent smolt estimate using a back calculation from trapped adults (Seiler et al. 1997).

OBJ-2.d. We propose to assess the annual adult steelhead returns to the Wind River subbasin. Currently, expanded redd surveys are used to develop adult escapement estimates based on assumptions on differences in winter and summer steelhead distribution and differences in hatchery and wild spawning time. Knudsen (1997) rated these methods as fair to poor for determining escapement estimates. Therefore, we propose to reinstall an adult trap in the Shipherd Falls fish ladder to improve the accuracy of adult escapement estimates. We propose to operate the adult trap year round. Adult steelhead will be floy tagged and released upstream. Since summer steelhead can successfully jump the falls, snorkel surveys and the Trout Creek trap will be used to determine the ratio of tagged to untagged fish. Adult run size will be estimated using Bailey's (1951) modification to the Peterson estimator. Floy tag loss will be estimated by use of double marking. In addition to receiving a floy tag, a small hole will be placed in the caudal fin with a paper punch. As fish are recaptured upstream at the Trout Creek trap floy tag loss will be estimated. The caudal fin tissue obtained from the secondary mark will be archived for future genetic analysis (DNA).

OBJ-2.e. We propose to conduct physical stream surveys following Hankin and Reeves (1988) methodology in a manner consistent with the USFS (1997, version 9.7) Pacific Northwest Region's Stream Inventory Handbook. The field inventory will quantify key stream habitat components and indicators of aquatic health including: 1) large woody debris, 2) stream habitat units following Platts (1974), 3) substrate composition following Wolman (1954), 4) channel geometry following Leopold (1994), and 5) riparian vegetation classification. This extensive stream channel, riparian vegetation, and aquatic habitat condition inventory will focus on private lands and supplement USFS surveys conducted on federal land. Priority sites are: Wind River (RM 0.0--16.1), Panther Creek (RM 0.0--4.5), Trout Creek (RM 0.0--1.5), Martha Creek (RM 0.0--1.0), and Hollis Creek (RM 0.0--1.5).

OBJ-2.f. We propose to contract the USGS to maintain and operate two pre-existing gauging stations located on Trout Creek and Wind River. Data will be collected for twelve months along with a minimum of six regularly scheduled discharge measurements per year, which is necessary to develop a hydrologic rating curve as described in the USGS Quality Assurance Plan. Data will be downloaded monthly and made available for public use.

OBJ-2.g. Water quality monitoring will be conducted at 10 new stations located primarily on private lands. These stations will augment existing stations on National Forest land. Monitoring will consist of an initial assessment in the first year, consisting of four quarterly sampling rounds and two flush flow sampling rounds. One flush flow and one base flow sampling round will occur each year for the next four years to monitor change over time. Parameters to be sampled include pH, turbidity, dissolved oxygen,

conductivity, continuous temperature, nitrate and nitrite nitrogen, phosphorous, and total and fecal coliform bacteria. Water quality monitoring program will be devised according to DOE QA/QC plan criteria.

OBJ-2.h. We propose to conduct 3 redd surveys to quantify spawning sites in 10 subbasins covering 25 miles of stream during each survey. We will estimate gravel composition within six index spawning reaches using methods described by McNeil and Ahnell (1960) and to follow protocol incorporated in the Yakima River Resource Management Plan. This standardized process will extract substrate samples using a McNeil core sampler in locations that represent spawning habitat. Comparative samples taken from within expired redds will serve to evaluate micro-environmental change resulting from spawning activity. Samples will be processed and sieved using standards described by the U.S. Conservation Service (1982). Analysis will focus on the relative abundance of fine-textured materials (< 8 mm.), which will be used to estimate the potential egg-to-fry survival as described by Young (1991). Site selection will be based on several factors including known spawning locations, land management activity, landform characteristics, and channel stability indicators.

OBJ-3.a & b. To accomplish this objective, data from fish popoulation assessments and physical habitat surveys (OBJ-2) will be combined with existing data to help assess the health of the Wind River subbasin. Substantial information on habitat conditions are available in the USFS's (1996a) Wind River Watershed Analysis but most of the data and analysis is concerned with USFS lands. The Wind River Watershed Analysis could be improved by incorporating a theoretical basis for analyzing how these processes affect populations such as summer steelhead, by examining cumulative effects of environmental factors on steelhead, and by incorporating additional information from off-forest lands. We propose to use the EDT model following Mobrand et al. (1995), Mobrand and Lestelle (1997), and Lestelle et al. (1996) to link environmental factors with population biology by using life-history diversity, capacity, and productivity information to provide more certainty in the analysis and outcomes of proposed restoration activities to help rebuild the Wind River summer steelhead population.

OBJ-4.a. Road obliteration will be accomplished in accordance with the USFS's (1996b) Forest Service Technology and Development manual. Five miles of road will be decommissioned in FY2000. Work will be conducted in accordance with the State of Washington Hydraulic Permit Approval. Erosion control prescriptions will follow best management practices using native or non-invasive grass seed and shrubs along with natural filter netting. Culvert sites will be fitted with erosion control mat, grass seed and shrubs. Roads will be seeded with non-invasive or native grass seed and native trees and shrubs. Photo points and vegetative growth/survival plots will be established to monitor rehabilitation. Road decommissioning projects are expected to reduce risk of mass failure/landslides, reduce road related sediment sources, restore natural water routing, and reduce surface run-off.

OBJ-4.b. In-stream LWD will be increased in 2.25 river miles to within the range of natural variability (75--120 LWD pieces/mile) documented in the USFS's (1996a) Wind River Watershed Analysis. Pieces of LWD will be placed within the bankfull channel to supplement LWD levels until riparian stands are old enough to contribute wood into the channel. This supplementation is expected to store sediment, dissipate water velocity, and restore habitat complexity. This restoration activity will incorporate methods developed by Rosgen (1994) and Leopold (1994). Placement of wood will be within reaches of stream that do not pose a significant threat to bridges, roads or structures. For effectiveness monitoring, LWD will be photographed, tagged and mapped. All work proposed under this objective will be preceded by an environmental analysis. All work will be conducted in accordance to the standards of US Army Corps of Engineers, State of Washington permiting process, and other appropriate requirements.

OBJ-4.c. We propose to: 1) thin 45 acres of overstocked, homogeneous stands of hardwoods and Douglas-fir to release native conifers such as cedar, hemlock and grand fir, and 2) under-plant 45 acres of stands with native conifers. Environmental analysis will follow EPA and NEPA standards. Plant survival and growth plots will be established and monitored for four years after treatment. A solar path finder will be used to evaluate the percentage of stream shaded during the months of June, July, August, and September. Riparian rehabilitation will accelerate growth rates and diversify stream-side vegetation, which increases potential LWD, bank stability, and stream shade. Restoration of riparian areas will provide a long-term, self-sustaining aquatic ecosystem.

OBJ-4.d. We propose to initiate a two-phase carcass supplementation program by first collecting necessary biological and physical aquatic baseline condition in proposed nutrient-supplementation locations and within a control watershed following methods described by Slaney et al. (1986) and Cederholm et al. (1989). Preliminary information needs include quantifying the following parameters: large wood, substrate composition, water conductivity, dissolved oxygen, nitrogen, carbon, and stream

temperature. Macroinvertebrate assemblages will be collected and will be identified and enumerated by major taxa groups following Plafkin (1989). Appropriate carcass supplementation levels will be derived from this preliminary monitoring effort. Logistical considerations will be examined in detail in effort to minimize disease risks and to optimize nutrient supplementation effectiveness. Disease records and pathogen evaluation will be examined at the local source of salmon carcasses, which is the USFWS's Carson National Fish Hatchery. A carcass preparation and treatment procedure will be established, as necessary, to address disease and health concerns identified at the hatchery. A collection procedure, transportation methods, and drop zones will be identified for future carcass distribution. Required permits and environmental documentation will be completed. The SEPA environmental documentation completed by WDFW in 1996 will be updated and revised to conform to NEPA standards. The subsequent Phase II is targeted to distribute the carcasses, as prescribed in Phase I, and will continue with biological and water quality monitoring. The second phase is proposed for FY2002.

OBJ-5.a. The Stevenson High School and Wind River Middle School programs are based generally on the Streamwalk (EPA) and Project Green models. The programs consist of classroom study, water quality, project monitoring, and assessment of land-use impacts. A report prepared by each student will be reviewed by the teacher and UCD for evaluation of curriculum effectiveness. The Carson Elementary School program will be based on the Adopt-A-Stream format and will involve water quality monitoring, macro-invertebrate surveys, and classroom salmon rearing.

OBJ-5.b. Brochures describing the watershed project will be sent out with the P.U.D. mailings. Possible volunteer events include tree plantings, river clean-ups, fish education days, and fish viewing events. Tree planting events will utilize conifers from UCD Tree Sales Program and will target degraded private riparian areas. River clean-ups will follow the WA Water Weeks and White Salmon Trash Rodeo models. Fish viewing events will be conducted to let people see fish in their natural environment. Fish Education Days will utilize agency personnel and build from established local models. Schools, environmental groups, service organizations, and the general public will be targeted for participation.

OBJ-5.c. Technical assistance will be provided at the request of the county or landowners for proposed projects that may affect watershed resources. Staff will primarily provide information on technical measures for lessening or mitigating impacts to water resources. Staff may also facilitate the implementation of these measures via lining up trained labor, supplying materials, or providing on-sight supervision.

g. Facilities and equipment

The UCD's offices in White Salmon (WA), USFS's Wind River Ranger District at Stabler (WA), and USGS's Columbia River Research Laboratory at Cook (WA) are all well equipped with the modern office equipment necessary to conduct complex data analyses and prepare professional documents.

Special or higher-cost equipment to be purchased with project funds include:
one GPS unit - $700; one backpack electrofishers with probes and batteries - $4,600; one computer - $2,750; flow meter - $3,525, one adult trap - $18,000, and one smolt trap (rotary screw-type) - $18,000.

h. Budget

Personnel costs are based on the number of people and the level of expertise needed to complete the tasks. Rates charged are based on standardized wage scales from each agency. Fringe benefits are a product of standard percentages charged for insurance and medical and retirement plans by each of the four agencies. Supplies include materials for channel and riparian restoration (large wood, rock, erosion-control blankets, rigging, vegetative plantings) and equipment for assessment activities (electroshocker, GPS unit, waders, dry suits, flow meter, block nets, thermographs, PIT-tagging devices and readers, and computers). O&M includes funding necessary to maintain an adult trap, five smolt traps and two fish ladders. Capital includes purchase price of one adult trap and one smolt trap. There are no construction costs. We budgeted for 1,500 PIT tags to be implanted in steelhead juveniles and smolts. Travel includes costs derived using individual agency-standardized per mile vehicle costs, rental rates, and travel to regional meetings and workshops. Indirect Costs are a product of standard percentages charged for overhead by each of the four agencies. Subcontractor costs include heavy machinery and labor crews for channel restoration and lab fees for water quality monitoring.

Funding received in the last two fiscal years has been much lower than that requested (FY1998: requested $891K, received $350K, 39% of requested; FY1999: requested $669K, received $350K, 52% of requested). Because the funds received were considerably lower than those needed to carry out planned activities, the probability of success of our efforts to restore watershed health has been jeopardized. Each of the four agencies involved has proposed a suite of activities that interrelate in a synergistic manner. Meeting our request for funding will allow our multi-agency cooperative approach to be engaged at a much more integrative and effective capacity. Full funding will allow us to establish the platform we need to launch top priority restoration activities, a fully integrated monitoring and assessment program, and the level of coordination needed among multiple partners to address the needs of the watershed and stakeholders.

Section 9. Key personnel

Name	Employer	Title	Hours to be funded
Thomas Brian Bair	USFS	Project Fishery Biologist	688
Duties: Habitat surveys and restoration, watershed health assessment.			
Lee C. Carlson	YIN	USFS/Tribal Liaison Biologist	0 (all in-kind)
Duties: Monitoring of spawning bed sediment			
Patrick J. Connolly	USGS	Research Fishery Biologist	2,080
Duties: Monitoring of steelhead parr populations, watershed health assessment.			
Tim R. Cummings	USFWS	Fishery Management Biologist	0 (all in-kind)
Duties: Smolt monitoring			
J. Gardner Johnston	UCD	Watershed Coordinator	2,080
Duties: Formation of a Watershed Council, Community involvement.			
James H. Petersen	USGS	Research Fishery Biologist	40
Duties: Watershed health assessment, project administration			
Daniel J. Rawding	WDFW	Fish Biologist	640
Duties: Monitoring of smolt and adult populations, watershed health assessment.			
Steve Stampfli	UCD	Manager	520
Duties: Project management, formation of Watershed Council, community education activities.			
Ken Wieman	USFS	Fisheries Program Manager	1,048
Duties: Habitat surveys and restoration, watershed health assessment, monitoring of spawning bed sediment.			

Resume for: Thomas Brian Bair

Experience

1992-Present Project Fishery Biologist, USDA Forest Service, Wind River Ranger District, Carson, WA.
Current Responsibilities: Analyze, plan, design, coordinate and implement instream and riparian restoration projects on the South Zone of the Gifford Pinchot National Forest.

1991-1992 Assistant District Fishery Biologist, Wind River Ranger District, Carson, WA.
1990-1991 Fishery Technician, Flathead National Forest, Kalispell, MT.
1989-1990 Assistant Packer/Fishing Guide, Yellowstone Mountain Guides, Belgrade, MT.
1986-1988 Forest Technician, North Fork Land Corporation, Big Sky, MT.

Education:	School	Degree and Date Received
	Montana State University	B.S. Biology, 1990

Expertise: My expertise and focus for the last five years has been on stream channel and riparian restoration. I have been responsible for the analysis, planning, design, partner coordination, budget, contract writing/administration, implementation and monitoring on the South Zone of the Gifford Pinchot National Forest. During the past five years, I have completed and am currently working on large scale watershed restoration projects totaling $1.26 million dollars. I have designed and implemented the following types of restoration projects: road obliteration, riparian rehabilitation (planting and thinning), land slide rehabilitation, and channel/flood plain restoration.

Publications and Reports (five most relevant)

Bair, T.B. 1992. Wind River Ranger District 1992 Anadromous Fish Basin Assessment. USDA, Forest Service, Gifford Pinchot National Forest.

Bair, T.B. 1993. Little Soda Springs Restoration Completion Report. USDA Forest Service, Gifford Pinchot National Forest, Wind River Ranger District.

Bair, T.B. 1994. Trout Creek Channel Restoration Analysis/Plan. USDA, Forest Service, Gifford Pinchot National Forest, Wind River Ranger District.

USDA, Forest Service. 1995. Wind River Watershed Analysis. Gifford Pinchot National Forest, Wind River Ranger District. T.B. Bair, principal investigator/author of fisheries, stream channel, and riparian vegetation analysis.

Bair, T.B. 1996. Trout Creek Restoration Monitoring/Completion Report. USDA, Forest Service, Gifford Pinchot National Forest, Wind River Ranger District.

Resume for: Lee C. Carlson

Experience

1991-Present	USFS/Tribal Liaison Biologist, Fishery Resource Management Program, Confederated Tribes and Bands, Yakama Indian Nation, Toppenish, WA.
	Current responsibilities: Tribal Fisheries program liaison to Gifford Pinchot, Wenatchee, and Okanogan National Forests (YIN Ceded Area).
1979-1991	Fishery Biologist, Assistant Fishery Director, Resource Manager; Pyramid Lake Paiute Tribe, Nixon, NV.
1973-1977	U.S. Army

Education:

School	Degree and Date Received
Colorado State University, Fort Collins, CO	B.S. Biology, 1973
Colorado State University, Fort Collins, CO	2nd B.S. Fisheries Biology, 1978

Expertise: My primary areas of expertise include salmonid and catastomid culture and habitat protection. I have conducted water quality monitoring studies in a lake environment, creel census, and lotic fish population sampling. I have advocated for tribal treaty rights since 1979 and have become versed in the NEPA and FACA processes, especially through participation in the Eastern Washington Cascades, Yakima, and Southwest Washington Provincial Advisory Committees.

Resume for: Patrick J. Connolly

Experience

1997-Present	Research Fishery Biologist, U.S. Geological Survey, Biological Resources Division, Columbia River Research Laboratory, Cook, WA. Current responsibilities: Team leader on research project to determine survival of summer steelhead over their first winter in the Wind River Basin (WA). Team leader on monitoring juvenile steelhead populations in the Wind River watershed.
1994-1997	Consultant to Wind River Restoration Team, WA.
1990-1996	Research Assistant, Oregon State University, Corvallis.
1988-1991	Fish Biologist--Subbasin Planner, Oregon Dept. Fish & Wildlife, Corvallis.
1987-1988	Fish Biologist--Research, Oregon Dept. Fish & Wildlife, Columbia River Research, Clackamas, OR.
1985-1987	Fish Biologist, Beak Consultants Inc., Portland, OR.
1984-1985	Fishery Biologist, U.S. Fish and Wildlife Service, National Fisheries Research Center, Columbia River Field Station, Cook, WA.
1983	Fish Habitat Surveyor, Idaho Transportation Dept., Coeur d'Alene, ID.

Education:

School	Degree and Date Received
Oregon State University, Corvallis	Ph.D. Fisheries Science, 1996
University of Idaho, Moscow	M.S. Zoology, 1983
Centre College of Kentucky, Danville	B.S. Biology, 1977

Expertise: The primary areas of my expertise include stream fish ecology and population dynamics. I have contributed to numerous studies involving anadromous and resident salmonids as well as non-salmonids of the Pacific Northwest.

Publications and Reports (five most relevant)

Connolly, P.J. 1997. Influence of stream characteristics and age-class interactions on populations of coastal cutthroat trout. Pages 173-174 *in* J.D. Hall, P.A. Bisson, and R.E. Gresswell, editors. Sea-run cutthroat trout: biology, management, and future conservation. Oregon Chapter, American Fisheries Society, Corvallis.

Connolly, P.J. 1997. Status of juvenile steelhead rearing in Trout and Panther creeks of the Wind River Basin. Prepared for: Washington Trout, Duvall, WA.

Connolly, P.J. 1996. Resident cutthroat trout in the central Coast Range of Oregon: logging effects, habitat associations, and sampling protocols. Doctoral thesis, Oregon State University, Corvallis.

Connolly, P.J. 1995. Wind River steelhead restoration project: with special emphasis on the Trout Creek Basin. Prepared for: Columbia River Research Laboratory, National Biological Service, Cook, WA.

Connolly, P.J. et al. 1992. Fish management plan for the Middle Fork Willamette Subbasin. Oregon Department of Fish and Wildlife, Portland.

Resume for: Timothy R. Cummings

Experience

1989-Present	Fishery Management Biologist, U.S. Fish and Wildlife Service, Columbia River Fisheries Program Office, Vancouver, WA. Current responsibilities: Service representative on Wind River Restoration Team and ESA review for Bull Trout.
1988-1989	Fishery Biologist, U.S. Fish and Wildlife Service, Fort Collins, Colorado.
1987-1988	Computer Aide, TGS Technology on contract to the U.S. Fish and Wildlife Service, Fort Collins, Colorado.

Education:

School	Degree and Date Received
Michigan State Univ., East Lansing	B.S. Fish and Wildlife Biology, 1983
Colorado State Univ., Fort Collins	M.S. Fish and Wildlife Biology, 1987

Expertise: My primary areas of expertise include stream fish ecology and habitat restoration. I have conducted numerous studies on resident and anadromous species. I have done extensive investigations on the habitat requirements of stream fish species in large and small riverine systems. In addition, I am well versed in the application of the Endangered Species Act and development of critical habitat designation.

Publications and Reports (five most relevant)

Cummings, T.R. 1996. Wind River Steelhead Smolt Inventory. US Fish and Wildlife Service, Vancouver, WA.

Cummings, T.R. 1995. Wind River Steelhead Smolt Inventory. US Fish and Wildlife Service, Vancouver, WA.

Cummings, T.R. 1994. Wind River Fishery Stewardship. Annual Progress Report. US Fish and Wildlife Service, Vancouver, WA.

Cummings, T.R. 1992. Swan Falls Instream Flow Study. US Fish and Wildlife Service, Vancouver, WA.

Cummings, T.R. 1987. Brook trout competition with greenback cutthroat trout in Hidden Valley Creek, Colorado. M.S. Thesis, Colorado State University, Fort Collins.

Resume for: J. Gardner Johnston

Experience

1995-Present	Watershed Coordinator, Underwood Conservation District, White Salmon, WA. Current responsibilities: Facilitate Wind River Action Committee. Coordinate and implement water quality restoration projects. Conduct water quality monitoring.
1995	Volunteer, Northwest Service Academy/AmeriCorps, Trout Lake, WA.
1993-1994	Manager, Little Creek Outdoor Adventures, Chapel Hill, NC.

Education:

School	Degree and Date Received
University of North Carolina, Chapel Hill	B.A. Biology, 1993

Expertise: My expertise includes implementing on-the-ground watershed restoration activities, supervising restoration work crews, organizing community volunteer events, facilitating diverse stakeholder groups, and conducting ambient water quality monitoring.

Publications and Reports

Johnston, G., et al. 1996. Sustainability in the White Salmon River watershed. Pages 231-234 *in* Project Management Institute 1996 Proceedings, Boston, MA.

Resume for: James H. Petersen

Experience

1995-Present	Research Fishery Biologist, U.S. Geological Survey, Biological Resources Division, Columbia River Research Laboratory, Cook, WA. Current responsibilities: Project leader on research project to determine survival of summer steelhead over their first winter in the Wind River Basin (WA). Co-leader on various mainstem Columbia and Snake River projects concerning juvenile salmon passage, predation, and reservoir drawdown.
1994	Acting Director, Columbia River Research Laboratory, USGS, Cook, WA.
1988-93	Research Fishery Biologist, Columbia River Research Laboratory, U.S. Fish and Wildlife Service.
1984-88	Associate Research Curator, Section of Fishes, Natural History Museum of Los Angeles County, Los Angeles, CA.
1983-84	Environmental Scientist, Section of Fishes, Natural History Museum of Los Angeles County.
1977-83	Graduate Teaching Assistant, University of Oregon, Eugene, OR.

Education:

School	Degree and Date Received
University of Oregon, Eugene	Ph.D., Marine Ecology, 1983
University of Queensland, Australia	Rotary Fellowship, 1976
Boise State University, Boise	B.S., Biology, 1975

Expertise: The primary areas of my expertise include predator-prey dynamics, population dynamics, and application of various modeling techniques to fisheries.

Publications and Reports (five most relevant)

Petersen, J.H. 1994. The importance of spatial pattern in estimating predation on juvenile salmonids in the Columbia River. Trans. Am. Fish. Soc. 123:924-930.

Petersen, J.H. and D.M. Gadomski. 1994. Light-mediated predation by northern squawfish on juvenile salmon. J. Fish Biol. 45: 227-242.

Petersen, J H., D.M. Gadomski, and T.P. Poe. 1994. Differential predation by northern squawfish on live and dead juvenile salmonids in the Bonneville Dam tailrace (Columbia River). Can. J. Fish. Aquat. Sci. 51:1197-1204.

Ward, D.L., J.H. Petersen, and J.J. Loch. 1995. Index of predation on juvenile salmonids by northern squawfish in the lower and middle Columbia River and in the lower Snake River. Trans. Am. Fish. Soc. 124:321-334.

Houck, A., B. Kaufman, and J. Petersen. 1995. Smallmouth bass in the Horseshoe Bend Reach of the San Joaquin River: Limiting factors and bioenergetic modeling. Report prepared for Southern California Edison Company, Rosemead, California.

Resume for: Daniel J. Rawding

Experience

1995-Present	Fish Biologist, Washington Department of Fish and Wildlife, Southwest Region, Vancouver, WA. Current Responsibilities: As the agency's steelhead and sea-run cutthroat stock assessment and harvest specialist I am currently responsible for development of adult and juvenile population estimates from the mouth of the Columbia to the Klickitat River, development and implementation of recovery plans for all Lower Columbia River tributaries and reintroduction plans for the Cowlitz and White Salmon rivers, and development and implementation of mainstem and tributary harvest regulations.
1994	District Fish Biologist, Washington Department of Fish and Wildlife, Region 5, Vancouver, WA.
1989-1993	Fish Biologist, Washington Department of Fish and Wildlife, Steelhead Program, Olympia, WA.
1986-1988	Fish Biologist, U.S. Army Corps of Engineers, Cascade Locks, OR.
1983-1986	Fish Biologist, Washington Department of Fish and Wildlife, Steelhead Program, Forks, WA.
1982-1984	Fishing Guide, Royal Coachman Lodge, Dillingham AK.
1984	Fisheries Technician, Washington Department of Natural Resources, Fish Program, Forks, WA.
1981	Fisheries Technician, U.S. Forest Service, Tongass National Forest, Sitka, AK.

Education:	School	Degree and Date Received
	University of Washington, Seattle	B.S. Fishery Science, 1982

Expertise: The primary area of my expertise is steelhead and sea-run cutthroat trout biology and management including population dynamics, life history, stream ecology, stock assessment, and harvest management.

Publications and Reports (five most relevant)

Rawding, D.J. 1997. Stock status update for steelhead in the lower Columbia River, Washington. Washington Department of Fish and Wildlife. Olympia, WA.

Hale, D.A., and D.J. Rawding. 1997. Columbia River Fish Management Plan -- Winter steelhead, all species review . Washington Department of Fish and Wildlife. Olympia, WA.

Rawding, D.J. 1997. Wind River smolt monitoring report. Washington Department of Fish and Wildlife, Southwest Washington Region, Vancouver, WA.

Hale, D.A., and D.J. Rawding. 1997. Annual anadromous gamefish report. Washington Department of Fish and Wildlife. Vancouver, WA.

Rawding, D.J., and D.A. Hale. 1996. Annual anadromous gamefish report. Washington Department of Fish and Wildlife. Vancouver, WA.

Resume for: Steve Stampfli

Experience

1988-Present	Manager, Underwood Conservation District, White Salmon, WA. Current responsibilities: Guide functions of the district including office management, technical assistance to private landowners and governments on natural resource topics, grant writing and administration, and managing on-ground projects.
1984-1987	Environmental Coordinator, Wharf Resources Inc. Annie Creek Mine, Lead, SD.
1981-1984	Director, South Dakota Department of Water and Natural Resources – Exploration and Mining Program, Pierre.
1980-1981	Mine Reclamation Specialist, South Dakota Department of Water and Natural Resources, Pierre.

Education:

School	Degree Received
Duke University, Durham, NC	Masters of Environmental Management
Colorado College, Colorado Springs	B.A., Biology

Expertise: Prime topics of expertise include watershed management methodology, disturbed land restoration, environmental monitoring and coordination of various governments and private interests.

Publications and Reports (five most relevant)

Stampfli, S. 1994a. White Salmon River watershed: basin land-use investigation report. Underwood Conservation District White Salmon, WA.

Stampfli, S. 1994b. White Salmon River watershed: basin water quality investigation report. Underwood Conservation District, White Salmon, WA.

Stampfli, S. 1992. Restoration of steep slopes adjacent to roadways in south central Washington. Underwood Conservation District, White Salmon, WA.

Stampfli, S. 1989. Water quality survey of Underwood Conservation District, Skamania and Klickitat Counties, WA. Underwood Conservation District, White Salmon, WA.

Ring, C., S. Stampfli, and B. Parish. 1986. Broad-winged hawk nesting in the Black Hills of South Dakota. South Dakota Bird Notes. Volume 6, Rapid City, SD.

Resume for: Kenneth Wieman

Experience

1993-Present	Fisheries Program Manager, USDA Forest Service, Wind River Ranger District, Carson, WA. Current Responsibilities: Represent Forest Service serving on the Wind River Restoration Team. South zone fisheries program manager responsible for developing fisheries stream restoration activities. Project leader on restoration project to evaluate and improve fish passage at Hemlock Dam. Conduct watershed analysis and environmental documentation for proposed forest management and land development activities.
1990-1993	Assistant district fisheries biologist, USDA Forest Service, Wind River Ranger District, Carson, WA.
1989-1990	Wildlife Biologist USDA Forest Service, Mount Saint Helens National Volcanic Monument, Amboy, WA.
1987-1990	Biological Technician USDA Forest Service, Mount Saint Helens National Volcanic Monument, Amboy, WA.
1986-1987	Student Conservation Association volunteer, Ridgefield National Wildlife Refuge, Ridgefield, WA.

Expertise: My primary areas of expertise and interest are in stream ecology, habitat evaluation and steam restoration. I have designed and implemented a number of stream monitoring and evaluation activities. I have gained considerable fish program management experience including contracting, budgeting supervision and interagency coordination.

Education:

School	Degree and Date Received
University of Wisconsin-Madison,	B.S. Biological Aspects of Conservation, 1986 B.S. Physical Geography, 1986

Publications and Reports (five most relevant)

Wieman, K. 1997. Restoration of adult fish passage at Hemlock Dam - completion report. US Forest Service, Wind River District, Carson, WA.

Wieman, K, and N. Adams. (in progress). An evaluation of Hemlock Dam smolt passage. US Forest Service, Wind River District, Carson, WA.

Roper, B.B., D. Konnoff, D. Heller, and K. Wieman. 1998. Durability of Pacific Northwest instream structures following floods. North American Journal of Fisheries Management 18:686-693.

Conklin, C., and Wieman, K. 1990. A paired watershed assessment of Canyon Creek and Siouxon Creek. Report prepared for the Siouxon environmental impact statement. US Forest Service, Wind River District, Carson, WA.

Wieman, K. 1987. The biological response of aquatic macro-invertebrates to Reed's canary grass management at Ridgefield National Wildlife Refuge.

Section 10. Information/technology transfer

Despite recent improvements in information exchange and communication between watershed managers and scientists, there remains a critical missing link in communication on the local level, especially for species-specific restoration strategies.

Our objective will be to present project findings, techniques, successes, and failures to regional watershed managers and scientists. At least one article describing experience gained from our efforts will be submitted to magazines and/or newsletters (e.g., EPA WaterTalk, Land and Water, Fisheries). In addition, project descriptions and findings will be presented at no less than two regional watershed conferences or workshops.

Water quality data will be submitted to WDOE for 303d evaluation. Data will also be made available to regional and national databases such as the USFS's "wqdat" and "hydrostoret" databases. Project information will be available through annual reports and a final report.

We will host a Lower Columbia Steelhead Conservation Workshop. Residents in the lower Columbia River basin will be targeted for participation. Topics will include facilitation of stakeholder groups, watershed assessment, monitoring and evaluation, education, and restoration techniques.

Congratulations!